at1121exam_practice EXAMPLE! DO NOT HAND IN FOR CREDIT (v13)

- If you are looking for a practice exam that you can hand in for credit:

https://chadworley.github.io/algtwo2026/u04/1121/at1121exam/at1121exam.html

Question 1

Simplify the radical expressions.

$\sqrt{99}$ $\sqrt{12}$ $\sqrt{44}$

$\sqrt{3 \cdot 3 \cdot 11}$ $\sqrt{2 \cdot 2 \cdot 3}$ $\sqrt{2 \cdot 2 \cdot 11}$

$3\sqrt{11}$ $2\sqrt{3}$ $2\sqrt{11}$

Question 2

Find all solutions to the equation below:

$$\frac{(x-8)^2-2}{7} = 14$$

First, multiply both sides by 7.

$$(x-8)^2 - 2 = 98$$

Then, add 2 to both sides.

$$(x-8)^2 = 100$$

Undo the squaring. Remember the plus-minus symbol.

$$x - 8 = \pm 10$$

Add 8 to both sides.

$$x = 8 \pm 10$$

So the two solutions are $x = 18$ and $x = -2$.

Question 3

By completing the square, find both solutions to the given equation. *You must show work for full credit!*

$$x^2 - 18x = -45$$

Take the linear coefficient, -18, halve it and square the result. You should get 81. Add this to both sides of the equation to complete the square.

$$x^2 - 18x + 81 = -45 + 81$$

$$x^2 - 18x + 81 = 36$$

Factor the perfect-square trinomial.

$$(x - 9)^2 = 36$$

$$x - 9 = \pm 6$$

$$x = 9 \pm 6$$

$$x = 15 \quad \text{or} \quad x = 3$$

Question 4

A quadratic polynomial function is shown below in standard form.

$$y = 5x^2 + 30x + 54$$

Express the function in **vertex form** and identify the **location** of the vertex.

From the first two terms, factor out 5 .

$$y = 5(x^2 + 6x) + 54$$

We want a perfect square. Halve 6 and square the result to get 9 . Add and subtract that value inside the parentheses.

$$y = 5(x^2 + 6x + 9 - 9) + 54$$

Factor the perfect-square trinomial.

$$y = 5((x + 3)^2 - 9) + 54$$

Distribute the 5.

$$y = 5(x + 3)^2 - 45 + 54$$

Combine the constants to get **vertex form**:

$$y = 5(x + 3)^2 + 9$$

The vertex is at point $(-3, 9)$.